

Optimasi Ekstraksi Minyak Limbah Padat Industri Jamu Ditinjau Dari Nisbah Pelarut dan Waktu Perendaman

Optimation Oil Extraction From Herbal Industry Solid Waste As Revealed by Solvent Ratio and Soaking Time

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Abstract

The objectives of the study are to determine the physico-chemical and composition identification of herbal industry solid waste oil, to determine the yield optimization of herbal solid waste oil, revealed by solvent ratio and soaking time, and the last to determine the yield and oil loss after purification process. The physico-chemical of herbal solid waste oil was identified according to SNI-01-3555-1998. Data were analyzed by Factorial Design (4x5) and it was laid out with Randomized Completely Block Design (RCBD), with 3 replications. As the first factor is solvent ratio consisted of 4 levels which are: 1:15, 1:20, 1:25, dan 1:30 (w/v) respectively. The second factor is soaking time consisted of 5 levels: 1, 2, 4, 6, and 8 hours respectively, and as block is time analysis. To test the different between treatment means the honestly significance difference was used 5% level of significance. The highest yield ($2,7556 \pm 0,2651\%$) was obtained by treatment 1 hour soaking time and solvent ratio 1:25 (w/v). The purification of herbal solid waste oil got the yield 38,79% with oil loss 61,21%. The result show that physico-chemical oil compounds have contents: acid value $56,4494 \text{ mg KOH/g fat}$; free fatty acid 25,8017%; acid degree value $100,6228 \text{ ml NaOH/g fat}$; saponification value $77,0299 \text{ mg KOH/g fat}$ and iodine value 1,9261 $\text{gI}_2/100 \text{ g fat}$. Meanwhile the result by Gas Chromatography-Mass Spectrometry (GC-MS) test shows that herbal industry solid waste oil contains of oleic acid, miristic acid, palmitate acid, 4,4-dimetoxybenzoin and octadecan.

Keywords: *herbal solid waste, physical-chemical, chemical compound, maceration, purification.*